

PATENT ABSTRACTS OF JAPAN

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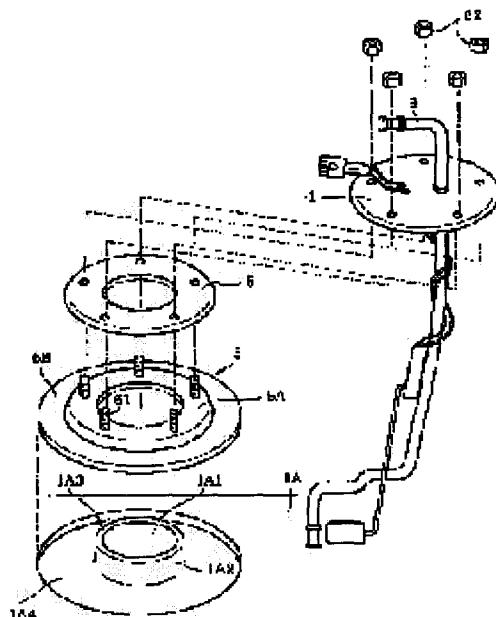
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(54) UNIT MOUNTING STRUCTURE FOR VEHICULAR FUEL TANK

(57)Abstract:

PROBLEM TO BE SOLVED: To maintain good corrosion resistance and to allow a simple and inexpensive mounting work by connecting a mounting plate near the external surface of a tank shell to the external surface of a mounting part, filling resin in all periphery, and providing a unit plate for closing the opening with bolts and nuts.



SOLUTION: The external surface part of the opening 1A1 of an upper tank shell 1A is formed to have a recess 1A4 corresponding to the external shape and thickness of a set plate 5. Also, the set plate 5 is formed to have a unit plate mounting plane 5A for fixing a set bolt 61, and the external surface of the set plate 5 is formed to have an extension part 5B.

and the external surface of the set plate 5 is formed to have an extension part 5B. The peripheral end of the extension part 5B is curved toward the external surface of the upper tank shell 1A from the unit plate mounting plane 5A and has a flange part kept abutted and engaged with the tank shell 1A. According to this construction, an undercoat paint can be easily applied to a gap between the upper tank shell 1A and the extension part 5B of the set plate 5, thereby eliminating a cause for corrosion.

CLAIMS

[Claim(s)]

[Claim 1]Both outer peripheral directions are equipped with an extension as it is characterized by comprising the following. The peripheral end perimeter of the above-mentioned extension combines a mounting plate close to the above-mentioned tank-shell outside surface with the above-mentioned opening periphery, and fills up the above-mentioned tank shell and the above-mentioned peripheral end perimeter with resin at least, and. Unit mounting structure of a fuel tank for vehicles provided with a unit plate which is provided with the 1st fastening member of the above, and the 2nd fastening member concluded, and blockades the above-mentioned opening. A tank shell provided with an opening.

It is provided along with the above-mentioned opening peripheral part of an outside surface of the above-mentioned tank shell, and they are two or more 1st fastening members.

[Claim 2]Unit mounting structure of the fuel tank for vehicles according to claim 1, wherein the 1st fastening member of the above is a bolt which projects toward an opposite hand of a tank shell from the above-mentioned mounting plate.

[Claim 3]The above-mentioned bolt is provided with a head section which the above-mentioned mounting plate is penetrated and projects in the above-mentioned tank-shell side of the above-mentioned mounting plate, The above-mentioned mounting plate is provided with a unit plate clamp face which covers the above-mentioned opening perimeter and bulges with same height higher than the above-mentioned head section at least, Unit mounting structure of the fuel tank for vehicles according to claim 2, wherein the above-mentioned extension is provided with a flange which it curves from the above-mentioned unit plate clamp face to the tank outside-surface side, and contacts the above-mentioned tank outside surface.

[Claim 4]Unit mounting structure of the fuel tank for vehicles according to claim 3 painting the above-mentioned tank shell and the above-mentioned flange to one.

[Claim 5]A unit construction of the fuel tank for vehicles according to claim 3 or 4, wherein it equips the above-mentioned tank shell with a body which projects in a method of the outside of a tank along with the above-mentioned opening and the

above-mentioned body tip is provided with a tank flange part which extends to a method of the inside of an opening of the above-mentioned unit plate clamp face and abbreviated same height.

[Claim 6]Unit mounting structure of the fuel tank for vehicles according to claim 3 to 5 covering the above-mentioned unit plate clamp face and the above-mentioned tank flange part, having an elastic body for seals, and carrying out the seal of between the above-mentioned unit plates.

[Claim 7]Unit mounting structure of a fuel tank for vehicles given in claims 1-6, wherein the above-mentioned mounting plate is combined with the above-mentioned tank-shell outside surface by the above-mentioned extension.

[Claim 8]Unit mounting structure of a fuel tank for vehicles given in claims 1-7, wherein an opening periphery of the above-mentioned tank-shell outside surface is equipped with a crevice doubled with peripheral shape of the above-mentioned mounting plate.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which an invention belongs] This invention relates to the mounting structure of the fuel tank for vehicles, and a unit in more detail about the unit mounting structure of the fuel tank for vehicles.

[0002]

[Description of the Prior Art] Generally, when attaching a fuel pump, a fuel pipe, or a meter unit to the fuel tank for vehicles, since the thickness of the upper part which forms the cover, and a bottom tank shell is thin, a fuel tank is not attached directly. So, in order to connect a fuel pump etc. with a fuel tank, it is attached via the unit for attachment.

[0003]When various units, such as a fuel pump unit and a meter unit, are conventionally attached to a fuel tank, First, the circumference of the opening which is a mounting hole of the upper part tank shell of a fuel tank which inserts a unit is made to carry out welding coupling of the plate for unit attachment of the ring shape constituted in one (henceforth a set plate) to a bolt or a nut. And after changing into the state where units, such as a fuel pump, were made to insert in the

above-mentioned set plate, there is mounting structure which fixed the above-mentioned unit to the fuel tank with the nut corresponding to the above-mentioned set plate or the bolt. Or the opening one A1 currently formed in the upper part tank-shell 1A wall surface of the fuel tank 1 as shown in drawing 4 and the cylindrical projection which made this one Aopening 1 periphery project from the above-mentioned wall surface by burring. (It is hereafter called a body) Have one A2, and after making the set plate 20 which has two or more crevices 21 and heights 22 in a sliding direction insert in the above-mentioned body one A2, the upper part tank shell 1A is made to carry out welding engagement, The unit 50 in which the end of the pipe 40 is attached to the upper surface side of the above-mentioned set plate 20 via the packing 30 for seals is stuck by nut fastening, The mounting structure which applied the under coat paints 70, such as PVC resin, to the above-mentioned upper part tank shell 1A is also proposed in the state where it covered with masking which does not illustrate the above-mentioned unit 50 (for example, JP,61-26630,U). In this case, the above-mentioned set plate 20 is making ring form, and the diameter of the inside diameter of the above-mentioned set plate 20 is expanded more slightly than the outer diameter of the above-mentioned body one A2. The insertion hole of the size is suitably established in each heights 22 of the above-mentioned set plate 20, respectively, and the bolt 60 for attachment has adhered to the set plate 20 in the state where the shank 61 of the securing bolt 60 was made to insert in each insertion hole from the undersurface side of the above-mentioned heights 22. The undersurface side of the crevice 21 of the above-mentioned set plate 20 and the upper part tank shell 1A have adhered by spot welding.

[0004]

[Problem(s) to be Solved by the Invention]However, the following problems are among the unit mounting structures shown above. In the mounting structure shown in the former, since the set plate itself is constituted in a nut or a bolt, and one, there is a problem that the weight of the set plate itself will increase. And since the set plate itself united with the nut or the bolt becomes thick, when it attaches a set plate to a fuel tank, the spot welding of it is impossible. Therefore, since the peripheral end of a set plate must be welded to a fuel tank, a working man hour will increase and the rise of a manufacturing cost will be caused. It is possible for the set plate 20 to manufacture the metal plate of thin meat by press working of sheet metal etc. comparatively in the mounting structure shown in the latter, Although somewhat improved about reduction of a manufacturing cost by material and easy [of manufacture], as shown in drawing 5, Since the set plate 20 is made into rugged

structure, an unpainted portion arises in the crevice between the upper part tank shell 1A and the set plate 20, or the crevice S between the upper part tank shell 1A and the bolt 60 for attachment, and to eye others. Moisture collects on the crevice S between the upper part tank shell 1A and the bolt 60 for attachment, etc., rust occurs, and it has become one of the causes which makes the fuel tank 1 corrode.

[0005]Then, in view of the problem in the unit mounting structure of the above-mentioned conventional fuel tank, the purpose of this invention prevents the flood to the interface of a fuel tank and a set plate, a crevice, and the main part of a set plate, and gives good corrosion resistance, and. It is in providing the unit mounting structure of the fuel tank for vehicles provided with easy and cheap unit mounting structure.

[0006]

[Means for Solving the Problem]In order to attain this purpose, the invention according to claim 1, It is provided along with the above-mentioned opening peripheral part of an outside surface of a tank shell provided with an opening, and the above-mentioned tank shell, Have two or more 1st fastening members, and equip an outer peripheral direction with an extension, and the peripheral end perimeter of the above-mentioned extension combines a mounting plate close to the above-mentioned tank-shell outside surface with the above-mentioned opening periphery, The above-mentioned tank shell and the above-mentioned peripheral end perimeter are filled up with resin at least, and it is characterized by having a unit plate which is provided with the 1st fastening member of the above, and the 2nd fastening member concluded, and blockades the above-mentioned opening.

[0007]The invention according to claim 2 is characterized by the 1st fastening member of the above being a bolt which projects toward an opposite hand of a tank shell from the above-mentioned mounting plate.

[0008]The invention according to claim 3 is provided with a head section which the above-mentioned bolt penetrates the above-mentioned mounting plate, and projects in the above-mentioned tank-shell side of the above-mentioned mounting plate, The above-mentioned mounting plate is provided with a unit plate clamp face which covers the above-mentioned opening perimeter and bulges with same height higher than the above-mentioned head section at least, It is characterized by providing the above-mentioned extension with a flange which it curves from the above-mentioned unit plate clamp face to the tank outside-surface side, and contacts the above-mentioned tank outside surface.

[0009]The invention according to claim 4 is characterized by painting the

above-mentioned tank shell and the above-mentioned flange to one.

[0010]It is characterized by the invention according to claim 5 equipping the above-mentioned tank shell with a body which projects in a method of the outside of a tank along with the above-mentioned opening, and providing the above-mentioned body tip with a tank flange part which extends to a method of the inside of an opening of the above-mentioned unit plate clamp face and abbreviated same height.

[0011]The invention according to claim 6 covers the above-mentioned unit plate clamp face and the above-mentioned tank flange part, is provided with an elastic body for seals, and is characterized by carrying out the seal of between the above-mentioned unit plates.

[0012]The invention according to claim 7 is characterized by combining the above-mentioned mounting plate with the above-mentioned tank-shell outside surface by the above-mentioned extension.

[0013]The invention according to claim 8 is characterized by equipping an opening periphery of the above-mentioned tank-shell outside surface with a crevice doubled with peripheral shape of the above-mentioned mounting plate.

[0014]

[Function]In the invention of claims 1-4 and seven to 8 statement, to the upper part tank shell to which a set plate is attached. Since the crevice of the peripheral shape of a set plate and the depth shape which is mostly equivalent to a part for board thickness is formed, the level difference of a set plate peripheral edge and an upper part tank shell is lost, and each interface distance can be made into the minimum. Since the reliability at the time of adhesion improving and carrying out the seal of a set plate and the upper part tank shell by paint by that cause can be raised and the coating work which aims at especially a level difference is lost, the efficiency of coating work can also be raised. Since the above-mentioned tank shell and the above-mentioned flange are painted to one, it becomes possible to apply an under coat paint so that the crevice between the near ends and upper part tank shells which touch the upper part tank shell of a set plate may be buried, and the seal of each interface can be carried out easily.

[0015]In the invention according to claim 5 to 6, since packing which can be thoroughly covered to the portion of an unpainted set plate with masking at the time of paint is formed, it becomes possible to prevent the flood to the non-painted part of a set plate.

[0016]

[Example]Hereafter, a graphic display example explains the details of this invention.

The same numerals are attached about the same member as a conventional example.

[0017]Drawing 1 is an outline view of the fuel tank 1 where the unit mounting structure of the fuel tank for vehicles by the example of this invention is applied.

The peripheral part of the tank shell by which the fuel tank 1 was halved up and down in the figure is joined by seam welding etc.

In order to provide the space for inserting a power transmission device (not shown) in the undersurface, a downward crevice is formed in a crosswise approximately center, and the bottom tank shell 1B serves as shape which the space which accommodates fuel in the fuel tank 1 can provide in right and left independently. On the other hand, the fuel pump 2 or the pipe 3 has attached to such an upper part tank shell 1A of the fuel tank 1 via each units 4 and 4 for attachment.

[0018]Drawing 2 is a partial exploded view showing the jointing condition of the upper part tank shell 1A, the set plate 5, etc.

In the figure, it has the opening one A1 currently formed in the wall surface of the upper part tank shell 1A, and the body one A2 which made this one Aopening 1 periphery project from the above-mentioned wall surface by burring, and tank flange part 1 A3 of width is suitably provided in the tip part inner circumference side of the above-mentioned body one A2.

Crevice 1 A4 with the depth shape equivalent to a part for the peripheral shape of the set plate 5 and board thickness which are mentioned later is formed in the one Aopening 1 above-mentioned peripheral part.

[0019]The set plate 5 which has the inside diameter whose diameter is expanded more slightly than the outer diameter of the above-mentioned body one A2, Making the ring form which has the step which the inner circumference side has projected up by width suitably, the insertion hole of the size is suitably established in the step of the above-mentioned set plate 5 in alignment with the periphery of the opening one A1 of the upper part tank shell 1A, respectively.

The bolt 60 for attachment adheres to the set plate 5 in the state where the shank 61 was made to insert in each insertion hole from the undersurface side of the above-mentioned set plate 5 so that the shank 61 of the bolt 60 for attachment may be projected in the direction which counters the upper part tank shell 1A.

Therefore, the step of the above-mentioned set plate 5 equips the position covering the perimeter of the above-mentioned opening one A1 with the unit plate clamp face 5A which bulges at least with same height slightly higher than a part for the height of the head section 63 of the bolt 60 for attachment. The extension 5B lower one step than the above-mentioned step is formed in the periphery of the above-mentioned

set plate 5.

The periphery edge of this extension 5B curves toward the **** [clamp face / 5A / above-mentioned / unit plate] tank-shell 1A outside-surface side, and it is provided with the flange 5C which carries out contact engagement to the above-mentioned tank shell 1A (refer to drawing 3 (a)).

[0020]After making the above-mentioned set plate 5 insert in the opening one A1, welding coupling of the flange 5C and crevice 1 A4 of the upper part tank shell 1A is carried out. And as shown in drawing 3 (a), it is completely a wrap from the upper part about the unit plate clamp face 5A of the set plate 5 by the masking 7 for paint. Then, it carries out with the coating device which the spreading activities of the upper part tank shell 1A which is not covered by the masking 7 for paint and the under coat paint 70 to the extension 5B of the set plate 5 do not illustrate. At this time, few crevices which above-mentioned crevice 1 A4 and the periphery edge of the above-mentioned extension 5B have estranged are also certainly filled up with a part of under coat paint 70.

[0021]If spreading of the under coat paint 70 is completed as shown in drawing 3 (b), the above-mentioned masking 7 for paint will be removed, and the packing 6 of O shape for seals is inserted in the upper surface side of the above-mentioned set plate 5. This packing 6 is formed from the elastic body for seals, and two or more insertion holes which insert in the shank 61 of the bolt 60 for attachment are provided. Let this be the shape which tank flange part 1 A3 of the set plate 5 and the upper part tank shell 1A which is un-painting with the masking 7 for paint is covered thoroughly, and can stick it from the upper surface at the time of spreading of the above-mentioned under coat paint 70.

[0022]And it inserts so that the unit 4 in which the fuel pump 2 or the pipe 3 is connected may be stuck to the upper surface side of the above-mentioned packing 6. Two or more insertion holes are established in this unit 4 as well as the above-mentioned packing 6, and the unit 4 is concluded by the set plate 5 via the packing 6 with the nut 62 for conclusion.

[0023]Since this examples are the above composition, when the set plate 5 is attached to crevice 1 A4 of the upper part tank shell 1A, The surface of the upper part tank shell 1A and the surface of the extension 5B of the set plate 5 can consider it as same height, and the crevice between the periphery edge of above-mentioned crevice 1 A4 and the periphery edge of the extension 5B can be made into very few things. By therefore, that that it becomes possible to apply the under coat paint 70 to

the crevice between the upper part tank shell 1A and the extension 5B of the set plate 5 easily. Moisture can be prevented from infiltrating into each above-mentioned member crevice, and the cause of making the upper part tank shell 1A corroding can be removed.

[0024]By the way, although it is made to perform the spreading activities of the under coat paint 70 in the middle of unit 4 attachment with the above-mentioned composition, coating work which made masking 7 for paint unnecessary after unit 4 attachment as carried out the spreading activities of the under coat paint 70 may be performed (refer to drawing 3 (C)). In this case, it may constitute so that the periphery edge and the packing 6 of the unit 4 may be further extended to the set plate 5 side. By this, the application range of the under coat paint 70 can be expanded, it can be further filled up with the crevice between each member, and sealing nature reliability can be raised further. A process of operation can be simplified and a manufacturing cost can be further reduced now.

[0025]

[Effect of the Invention]In the invention of claims 1–4 and seven to 8 statement, the crevice of the depth shape equivalent to a part for the peripheral shape of a set plate and board thickness is formed in the upper part tank shell to which a set plate is attached.

Therefore, the level difference of a set plate peripheral edge and an upper part tank shell is lost, and each interface distance can be made into the minimum.

Since the reliability at the time of adhesion improving and carrying out the seal of a set plate and the upper part tank shell by paint by that cause can be raised and the coating work which aims at especially a level difference is lost, the efficiency of coating work can also be raised. Since the above-mentioned tank shell and the above-mentioned flange are painted to one, it becomes possible to apply an under coat paint so that the crevice between the near ends and upper part tank shells which touch the upper part tank shell of a set plate may be buried, and the seal of each interface can be carried out easily.

[0026]According to the invention according to claim 5 to 6, since packing which can be thoroughly covered to the portion of an unpainted set plate with masking at the time of paint is formed, it becomes possible to prevent permeation of the moisture to the non-painted part of a set plate.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is an outline view of the fuel tank by which the mounting structure of the fuel meter unit by the example of this invention is applied.

[Drawing 2] It is an exploded view for explaining the important section composition of the mounting structure of the fuel meter unit by this invention example.

[Drawing 3] The partial expanded sectional view of the important section which showed drawing 2 (a) and (b), and (c) are the partial expanded sectional views showing the important section of another example.

[Drawing 4] It is an exploded view of the conventional unit mounting structure.

[Drawing 5] It is a partial expanded sectional view showing the important section of the unit mounting structure shown in drawing 4.

[Description of Notations]

1 Fuel tank

1A Upper part tank shell

1A1 Opening

1A2 Body (cylindrical projection)

1 A3 Tank flange part

1 A4 Crevice

5 Set plate (plate for unit attachment)

5A Unit plate clamp face

5B Extension

5C Flange

6 Packing

60 The bolt for attachment

63 Head section

70 Under coat paint

DRAWINGS

[Drawing 1]

